



Carbon Capture &
Storage Association

CCSA CSLF Joint Workshop – “CCS Post-Paris: Realising Global Ambitions”

Summary Report

On the 29th June 2016 the CCSA, in collaboration with the Carbon Sequestration Leadership Forum (CSLF) held a joint workshop on “*CCS Post-Paris: Realising Global Ambitions*”. The workshop was part of the annual CSLF meetings, which were this year hosted by the UK from the 27th to 30th June.

A summary of the workshop can be found below:

Key Themes:

1. Developing an investable business model:

The need to change the business model for CCS and develop an investable business model emerged a number of times throughout the day. A number of presenters raised the challenge of an appropriate risk-reward balance across the chain and the need to ensure sufficient financial guarantees across the chain. For a company, the business model needs to reflect the fact that benefits must exceed costs and that for a storage company in particular, there is a pre-operational period and a post-closure period where no revenue is forthcoming. This ‘overhang’ needs to be addressed to make any business model successful. It was clear that different business models are needed for each part of the chain and that business models also need to be tailored to projects. Governments will also need to do their part and develop regulatory frameworks that can accommodate part of the risk.

2. Solutions – break the chain and public-private partnerships

Considering the options for how to move forward with CCS, one particular phrase was coined; the need to “break the chain”. A number of presenters essentially recommended that the support required for capture needs to be considered separately to the support required for transport and storage infrastructure, due to the fact that capture and infrastructure represent inherently different types of projects and therefore suit different business models and incentives.

Other potential solutions included developing projects via a public-private partnership approach.

Session 1: The role of CCS post-Paris

The workshop began with two introductory presentations; from Philippe Benoit (International Energy Agency) and Myles Allen (Oxford University). Both presentations looked at the new landscape following the Paris Agreement and the need to revise models and scenarios (e.g. the IPCC Assessment Reports) in line with the new 1.5°C goal. The desire to reach net zero carbon emissions was also discussed. Both presenters emphasised the importance of CCS to meet the 1.5°C and net zero emissions goals – in particular, it was pointed out that CCS has an advantage as it provides flexibility to countries on how to meet the Paris Agreement. This is especially the case for bio-CCS (BECCS) which will become increasingly important as a negative emissions technology, and will again provide valuable flexibility and could possibly offset harder-to-decarbonise sectors such as aviation. The presenters also stressed the need to move CCS away from a singular focus on power generation and look at other sectors such as industry and Enhanced Oil Recovery.

Session 2: Preparing for deployment

This session focussed on the UK and global storage potential, as well as experiences in implementing carbon capture readiness requirements in the EU and beyond. In terms of storage capacity, the presentations concluded that in the UK and globally there is a substantial storage resource – the UK Storage Appraisal Project found that there is enough data to start the UK CCS industry and that there are no technical barriers to the 5 main storage sites that were investigated. From a global perspective, the data is extremely variable depending on the country and whether they have carried out any national storage assessment.

A presentation then followed on experiences in implementing carbon capture readiness (CCR) in Europe and beyond. The first presenter (from the EU Commission) concluded that the CCS Directive is currently fit for purpose and no revision is required yet. In terms of CCR, it was found that the UK has the most practical experience, with detailed guidance issued by the Department for Energy and Climate Change (DECC) as well as regular monitoring reports. However, some challenges remain. Looking beyond the UK and Europe, there is relevant CCS legislation in countries such as the U.S., Canada, Australia, China and Norway. In conclusion, to comply with CCR in Europe, more effort is needed to increase storage readiness and identify locations of potential clusters. These would also be valuable lessons outside the EU, particularly for emerging economies looking to utilise CCS as part of their emissions reduction strategies.

Session 3: Hubs, clusters and sharing infrastructure

A presentation on the North Sea Basin Task Force – a Government-to-Government initiative involving the UK, Netherlands, Germany, Norway, Belgium and others – kicked off this session with a focus on how to develop European CCS infrastructure and ensuring the first EU CCS projects are expandable with the potential to build upon. A strategic regional plan is needed to ensure coordination and deliver projects of common interest.

A panel discussion then followed with brief remarks from the ROAD/Rotterdam hub, the Teesside Collective cluster and the Scottish CCS perspective. The Rotterdam project, although a small hub, is

aiming to extend to other parts of Holland (starting with The Hague). The idea is to use the Rotterdam hub to also provide district heating to cities as well as looking at other uses for heat. Turning to the Teesside Collective, this project has been developing an industrial blueprint that can be replicated to other areas. In terms of next steps, it was emphasised that a business case and funding proposition is now needed, as well as a strong national policy. It is likely that moving forward, smaller-scale projects will be prioritised over large-scale ones.

Finally, the panel heard from Scottish Enterprise – they are currently developing an industrial CCS roadmap, also looking at smaller-scale projects initially. The presenter emphasised the need for public-private partnerships, the need to de-risk storage and the need to persuade Governments of the importance of CCS – to increase interest and provide funding.

Session 4: Fresh perspectives on CCS

The CCSA gave the first presentation in this session on the new CCSA report “*Lessons Learned - Lessons and Evidence Derived from UK CCS Programmes, 2008 – 2015*”. The report sets out a number of positive lessons; both CCS competition projects would have delivered the outcome and the key barriers to delivering the projects were commercial, not technical. A number of challenges also emerged from the report including the need to solve cross-chain risk, making CO₂ storage an attractive investment proposition and the negative impact policy changes can have on private sector investment appetite.

ZEP gave the next presentation on the need for a “market maker” to develop an appropriate business model for CCS. The role of CCS hubs was emphasised as being key to developing cost-effective CCS projects, and the importance of politically supportive countries/Governments or regions was also raised.

The next three presentations looked at the case for shipping CO₂, US DOE lessons on brine extraction and storage and the H21 Leeds City Gate hydrogen project. On shipping, the presentation pointed out that whilst there are some challenges with shipping (e.g. pressure) there are also a number of benefits such as intermediate storage and direct injection. The US DOE summarised the results of phase 1 of the brine extraction and storage test, which has carried out a regional characterisation of the geological storage potential of northern U.S. and southern Canada. Finally, Northern Gas Networks gave a presentation on the H21 Leeds City Gate project, which proposes to convert the Leeds gas grid into a hydrogen network. This innovative project is receiving quite a lot of attention at the moment due to its ability for incremental rollout as well as being flexible and expandable.

Session 5: What can the CSLF do? Summary and Next Steps

The final session included concluding remarks from the CSLF Technical and Policy Group chairs and the CCSA. The CSLF representatives summarised current activities, including new task forces, a roadmap (which will be delivered at the CSLF Annual Meeting in October 2016) and the goal of making clear recommendations to the CSLF Policy Group. The CCSA emphasised how much industry values engagement with the CSLF and pointed to the need to change thinking around CCS and look at the regional /bottom-up drivers for CCS.